

Automated Charge Processing Streamlines Data Entry

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A healthcare organization can significantly improve its billing office's performance by implementing an automated charge-processing system that integrates scanning technology with hospital and physician office billing systems. Such a system offers large healthcare organizations a means to eliminate costly and inefficient manual processing of paper charge sheets, thereby improving productivity and accuracy.

An automated charge-processing system allows a billing department to automatically post, track, monitor, control, and reconcile all charges through a central database. To implement the system, a healthcare organization should assemble a project team composed of representatives from information services, the software supplier, and the organization's business offices. The team will be responsible for setting up the system; designing an easily scannable, standard charge form; establishing the rules the system will follow for posting charges; and designing billing office reports.

Many large healthcare organizations, such as regional IDSs and multihospital systems, continue to absorb the high costs of manually processing thousands of physician and hospital charges each month. In a typical health system's hospital billing department, for example, charge-processing staff must perform the following manual functions daily:

- Reconcile charge sheets with census reports;
- Query clinical staff for missing information;
- Detach and forward copies of charges to the physician billing office;
- Post facility charges into the hospital billing system;
- Post the diagnosis code into the medical record abstracting system;
- Post all coding and abstracted information into billing systems;
- Review an accounts-not-billed report and follow up on outstanding charge information; and
- File charge information.

The health system's physician billing office, in turn, must:

- Await manual delivery of the carbon copies of charges from the hospital department;
- Sort charges by date of service;
- Batch and log charges;
- Post charges into the physician billing system;
- Enter completed charge information on the charge log; and
- File charge information.

An automatic charge-processing system can eliminate or facilitate many of these steps. The system uses software that enables billing office staff to assemble a comprehensive, rapidly accessible data repository for all charges processed by a health system's various billing departments.

Advantages

An on-line charge-processing system automatically reconciles charge data and prompts clinical users for all requisite charge information. Thus, billing staff are relieved of having to perform manual reconciliation processes or query clinical staff to provide missing information. The on-line system can enable a health system to reduce its billing department staff by as much as 75 percent, simply by eliminating manual data entry of charges, diagnosis codes, abstracting, and coding information.

Because charge records can be stored on-line, billing staff no longer need to file and maintain archives of paper records. In addition, the ability to transfer records electronically eliminates delays and losses due to forwarding of paper records.

How the System Works

An automated charge-processing system retrieves data from and inputs data to the healthcare organization's billing system in much the same way as a data-processing clerk. The system's charge-processing software, which must be custom-programmed to interface with a health system's billing systems, reads the billing system screens and then, based on the information on the charge sheet,

By installing an automatic charge-processing system, a health system can reduce data-entry labor costs by as much as 75 percent.

posts the charge. The software's posting decisions are based on a set of rules for posting charges, coding, and abstracting information that the software has been programmed to follow.

The automated system also requires terminal emulation software to provide a link to the healthcare organization's billing systems and a compatible format for running billing system sessions. In addition, the system requires optical character recognition/intelligent character recognition (OCR/ICR) software and a scanner, a hand-print recognition program, and an electronic charge-editor program.

The OCR/ICR system provides a means to input information into the automatic charge-posting database. The software allows paper documents to be converted into an electronic text file that can be edited on-line. A document scanner creates an electronic picture of a page, analyzing characters to determine which ones form actual words or numbers and which are merely graphic elements. The hand-print recognition program allows the computer to read information that is handwritten on the form, such as ICD-9 coding information. The charge-editor software program is used to process the scanned charge files. This program allows batches of charges to be reconciled on-line before they are posted. The editor also enables billing staff to make additions and corrections to charge sheets on-line.

Implementation Process

As with all major projects, implementation of the automatic charge-posting systems requires that a project team be formed to define major tasks in detail, assign appropriate resources, and set timelines. Specifically, the project team is responsible for setting up the base system and hardware, redesigning the health system's charge form, developing the rules that the system will use for posting charges onto billing systems, designing reports, and ensuring that billing staff receive adequate training on the new system. In general, this team should include an information services representative, a representative from the software supplier, and representatives from various health system business offices who have experience with posting charges and are familiar with the charge forms that will be redesigned.

Setting up the base system and hardware. In general, implementation of an automated charge-processing system, including hardware and software set-up and configuration, will take from three to four weeks (for the base

system) and cost \$30,000 to \$60,000, depending on configuration and organization size.

Redesigning the charge form. An easily scannable, standard charge form should be developed to facilitate integration of billing processes throughout the health system and control billing costs in general through standardization. In addition, developing a standard form helps to minimize system implementation costs because the health system expends effort on redesigning just one form, rather than many separate forms for each of the health system's service areas.

The standard form should include all data elements required by both hospital and physician office billing systems. Its design therefore should be overseen by billing representatives from these facilities. The healthcare organization also must be prepared to update the charge form from time to time to accommodate changes in automatic charge-posting technology.

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Some of the form changes required include the use of:

- Mark-sense technology (check boxes), wherever possible, to allow charge information to be programmed directly into the form (eg, by providing a date field that recognizes only actual dates and a social security number field that has spaces for nine digits), thereby eliminating errors caused by missed keystrokes;
- Red ink on the basic form (and installation of a red light in the scanner) so that when the completed forms are scanned, the form template will disappear, leaving only the filled-in information for the software to process; and
- Bar codes to identify account numbers.

Automated charge-processing technology can substantially reduce a healthcare organization's business-process costs.

Developing custom rules for posting charges into billing systems. These user-defined rules are critical to effective posting of information into the billing systems. The rules reduce the number of exceptions the automated charge-processing system encounters when posting charges and virtually eliminate the need for human intervention due to posting errors. Typically, rules are developed for posting data elements such as charges, ICD-9 codes, CPT codes, code modifiers, physician and resident information, account information, and place of service. For example, the application might be programmed to limit charges posted to valid dollar amounts only and automatically reject ICD-9, CPT, and physician codes that are not valid for the department indicated.

Designing reports. The project team must determine what reports will be issued after the automated system finishes posting. Typically, the billing department will require reports showing what was posted and documenting exceptions or rejections so that staff know what work must be performed to close the batch. It also may be possible to create ad hoc reports on demand, such as dollar amounts posted per day and charges posted per employee.

Ensuring that billing staff receive adequate training on the new system. As with any new technology, training and education are key to successful implementation of an automated charge-processing system. Fortunately, because

the system is simple and easy to use, billing staff require very little training to operate it effectively. The key processes that staff will need to understand are how to scan the charges into the system, how to create the electronic file to be imported into the database, and how to interactively post charges to the host billing system.

Case Studies

In the fall of 1997, a large IDS in Pennsylvania comprising four hospitals (totaling about 1,800 beds) and multiple physician practices implemented an automatic charge-processing system using the new software and the previously described implementation process. In six months, the system was in place, and the IDS was able to provide authorized staff with enterprisewide access to all hospital and physician office billing information. Following implementation, the IDS saw an improvement in hospital reporting for patients who were discharged before their final bill was issued. The improvement was attributed to the system's capability of posting hospital diagnoses simultaneously with facility charge information.

In early 1998, a medium-sized clinic in New Orleans, Louisiana implemented an automatic system that transferred most charge-processing activities to its consolidated business office. By mid-1998, the clinic had increased its average daily posting from \$100,000 to \$400,000 in charges per day for the anesthesiology and surgery clinics alone.

Some other quantifiable performance improvements that both of these institutions realized following implementation were:

- A 75 percent reduction in charge-posting staff;
- An average increase in charge-data entry per staff member from 60 charge sheets per hour into a single billing system to 250 charge sheets per hour into two billing systems simultaneously;
- A reduction in accounts receivable and an increase in cash flow due to a substantial decrease in charge delays;
- One hundred percent charge-posting accuracy due to implementation of consistent posting rules;
- Institution of a 24-hour work day because the system can perform automatic charge-posting processes without the presence of staff; and
- Reduced dependence on individual employees for charge posting because all posting logic is programmable and documented.

Technological advancements included:

- The ability to run multiple charge-posting sessions from a single computer station;
- Broader and more efficient search criteria for locating posted charge information; and
- The ability to provide multiuser access across local-or wide-area networks (LANs or WANs).

Conclusion

Automated charge-processing technology can substantially reduce a healthcare organization's business-process costs. As with implementation of any large-scale, new electronic technology, a healthcare organization that wishes to invest in an automated charge-processing system needs to develop clear strategic objectives for the system, engage in a comprehensive planning process that can be refined as implementation proceeds, and provide effective training on use of the new system. ■

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